

Review of forecast skill

***Skill of 5-day forecasts has doubled in
20 years in Southern Hemisphere,
25 years in Northern Hemisphere***

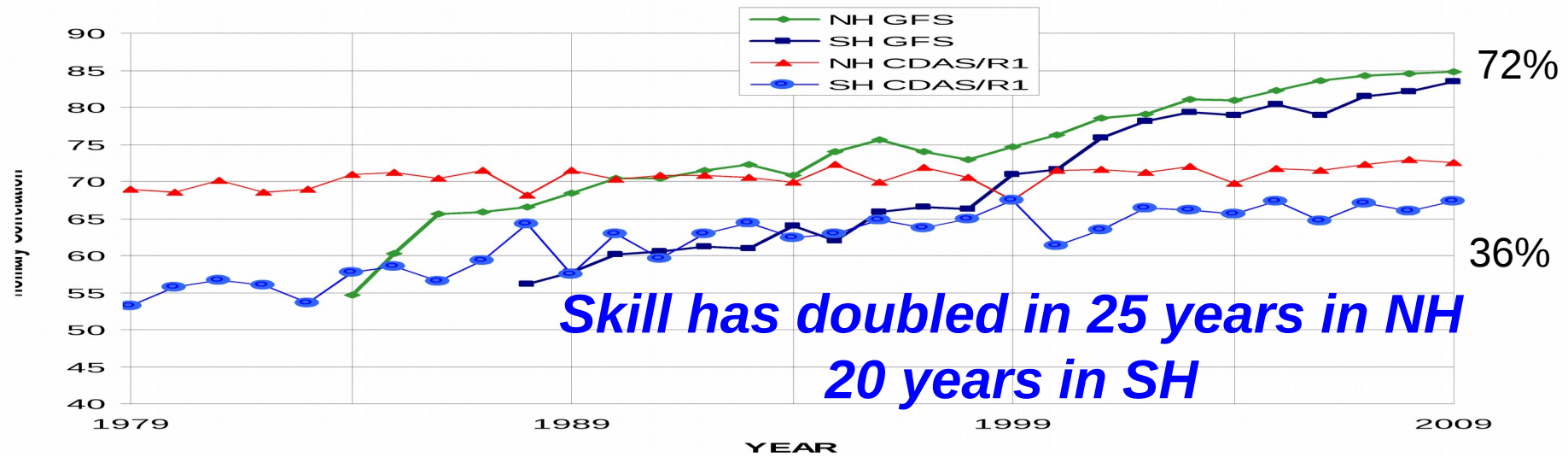
***GFS gained slightly last year, more than ECMWF
Met Office and CMC gained more than GFS***

***Progress over past 2 years slow, especially in
Northern Hemisphere heights, tropical winds,
Since implementation of GSI in May 2007***

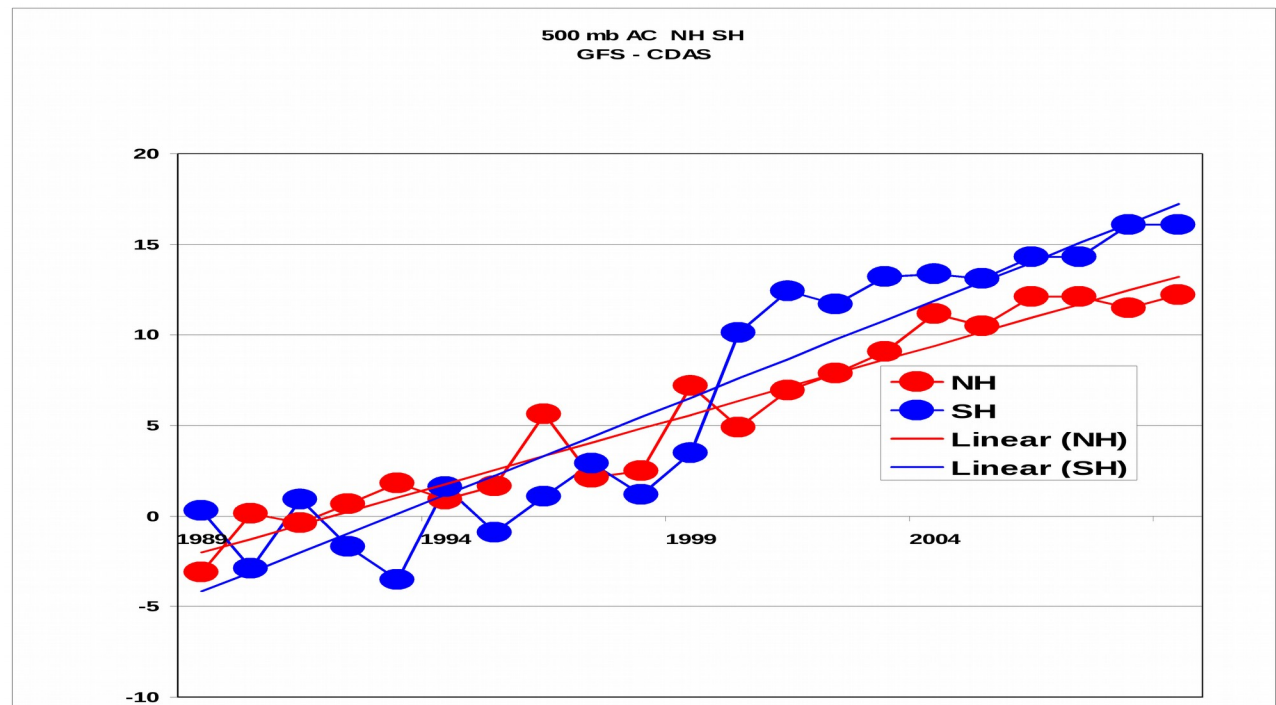
Figures from R. Kistler, Fanglin Yang, HPC

CDAS/Reanal vs GFS NH/SH 500Hpa day 5 Anomaly Correlation (20-80 N/S)

Variance explained



R. Kistler



GFS vs CDAS

2009

	<u>NH</u>	<u>SH</u>
GFS	84.8*(84.5)	83.4*(82.1)
CDAS	72.6	67.3
GFS-CDAS	12.2*	16.1**

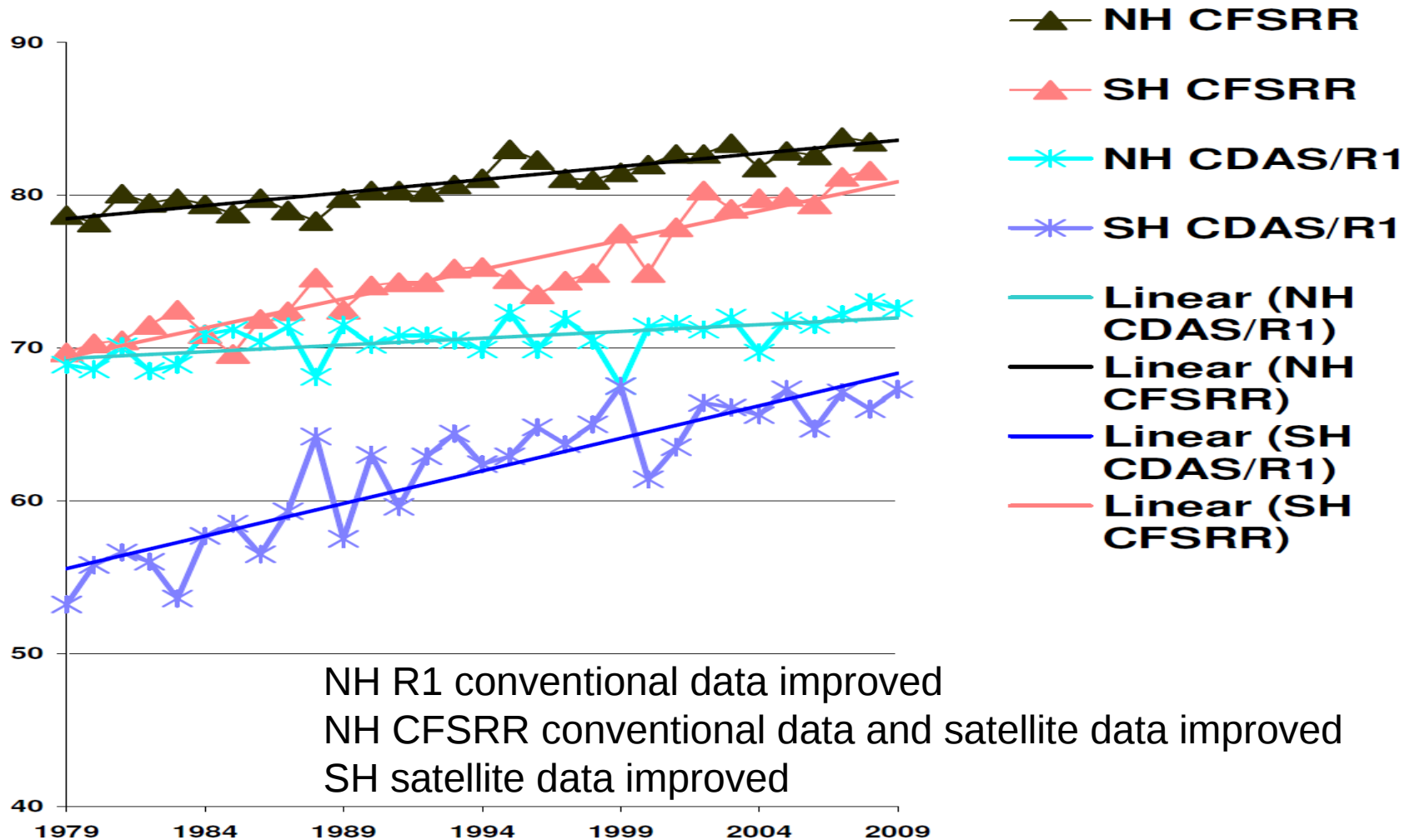
* Record

** Ties Record of 2008

R. Kistler

500 mb 5 Day Forecasts

Kistler



NH R1 conventional data improved

NH CFSRR conventional data and satellite data improved

SH satellite data improved

R1 underestimates role of data improvements in NH

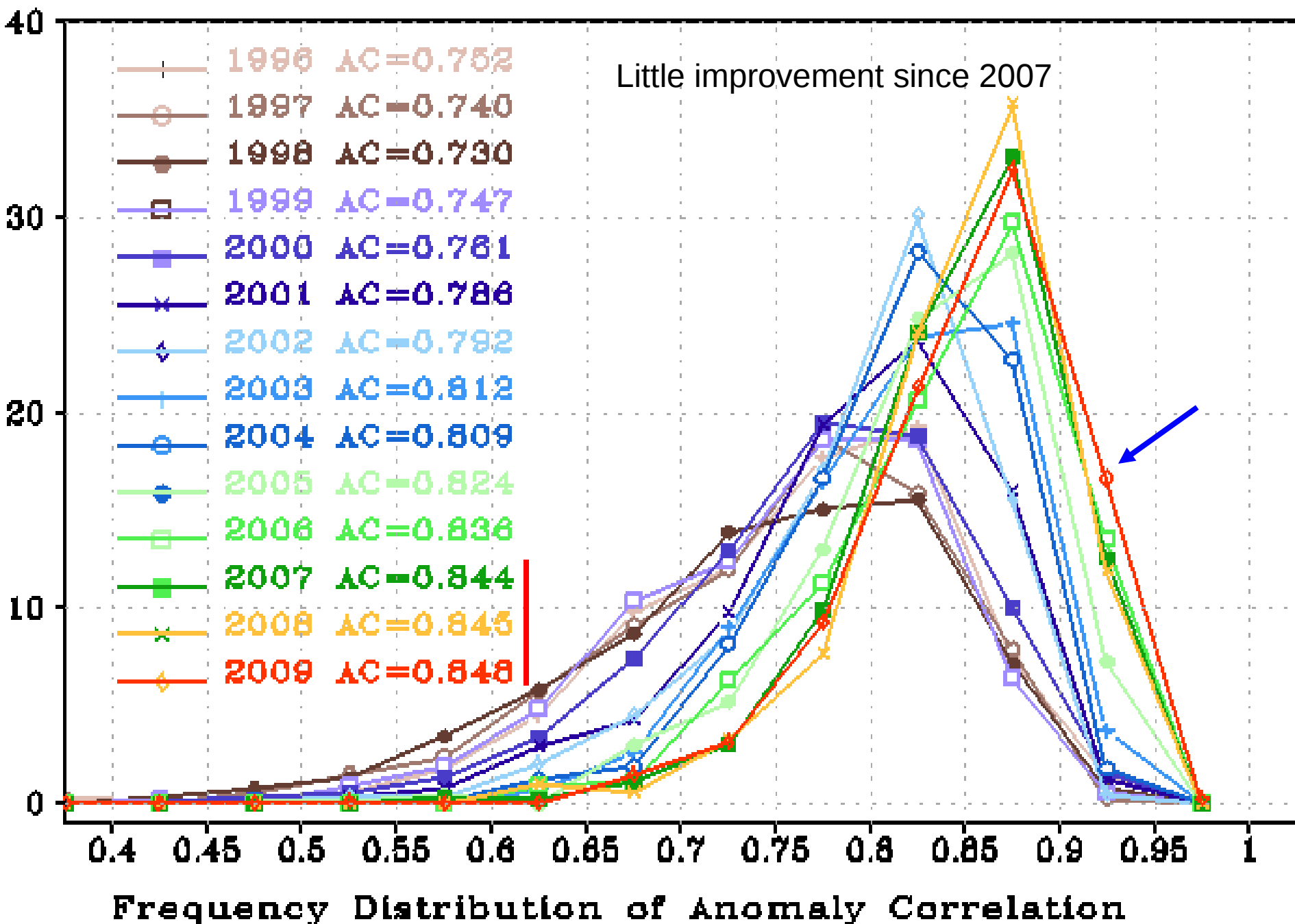
GFS and ECMWF Annual Mean AC and Frequency Distribution 500 hPa Height, 00Z-Cycle Forecast 1996 - 2009

Twenty bins were used to count for the frequency distribution, with the 1st bin centered at 0.025 and the last been centered at 0.975. The width of each bin is 0.05.

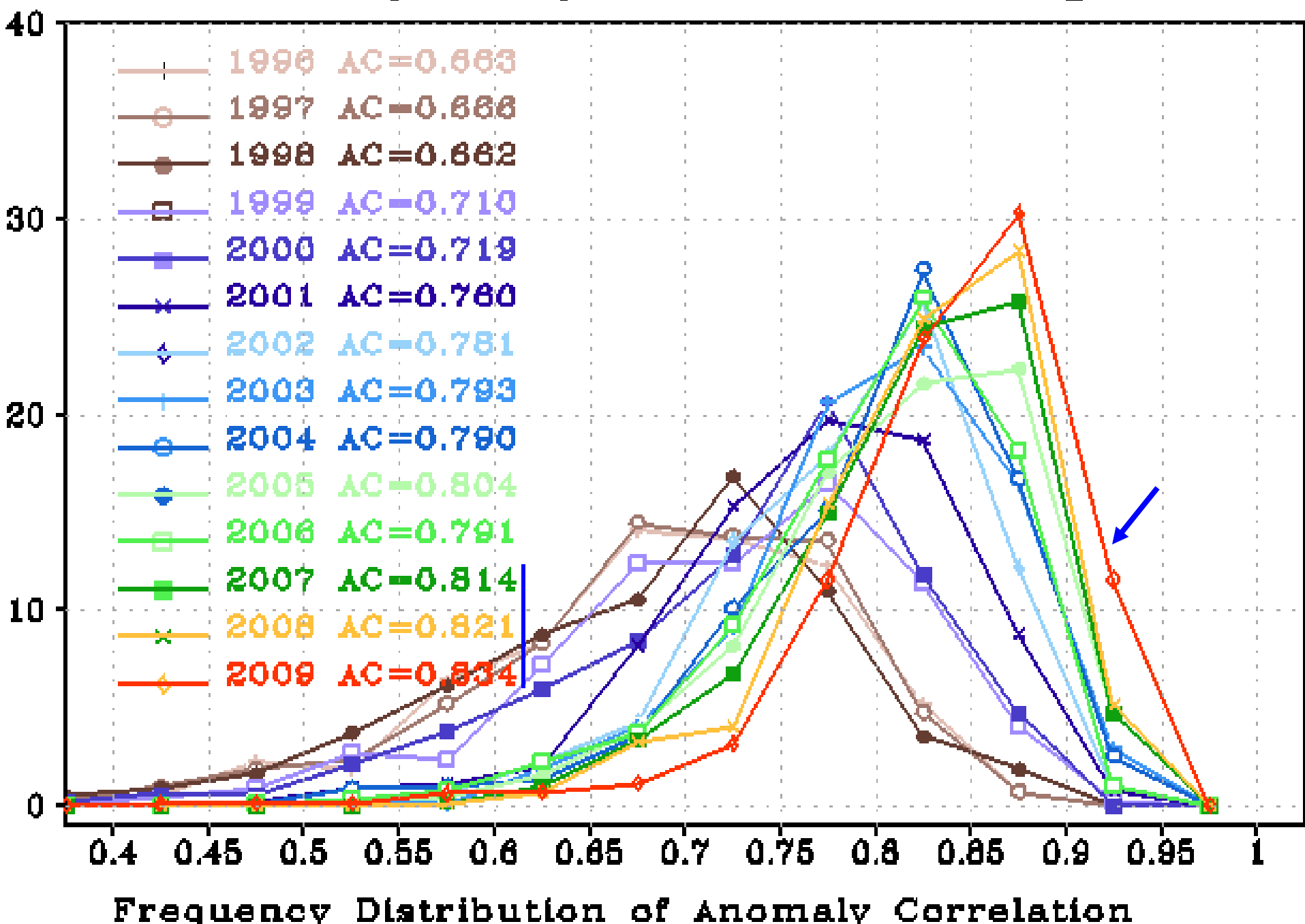
Fanglin Yang

EMC/NCEP

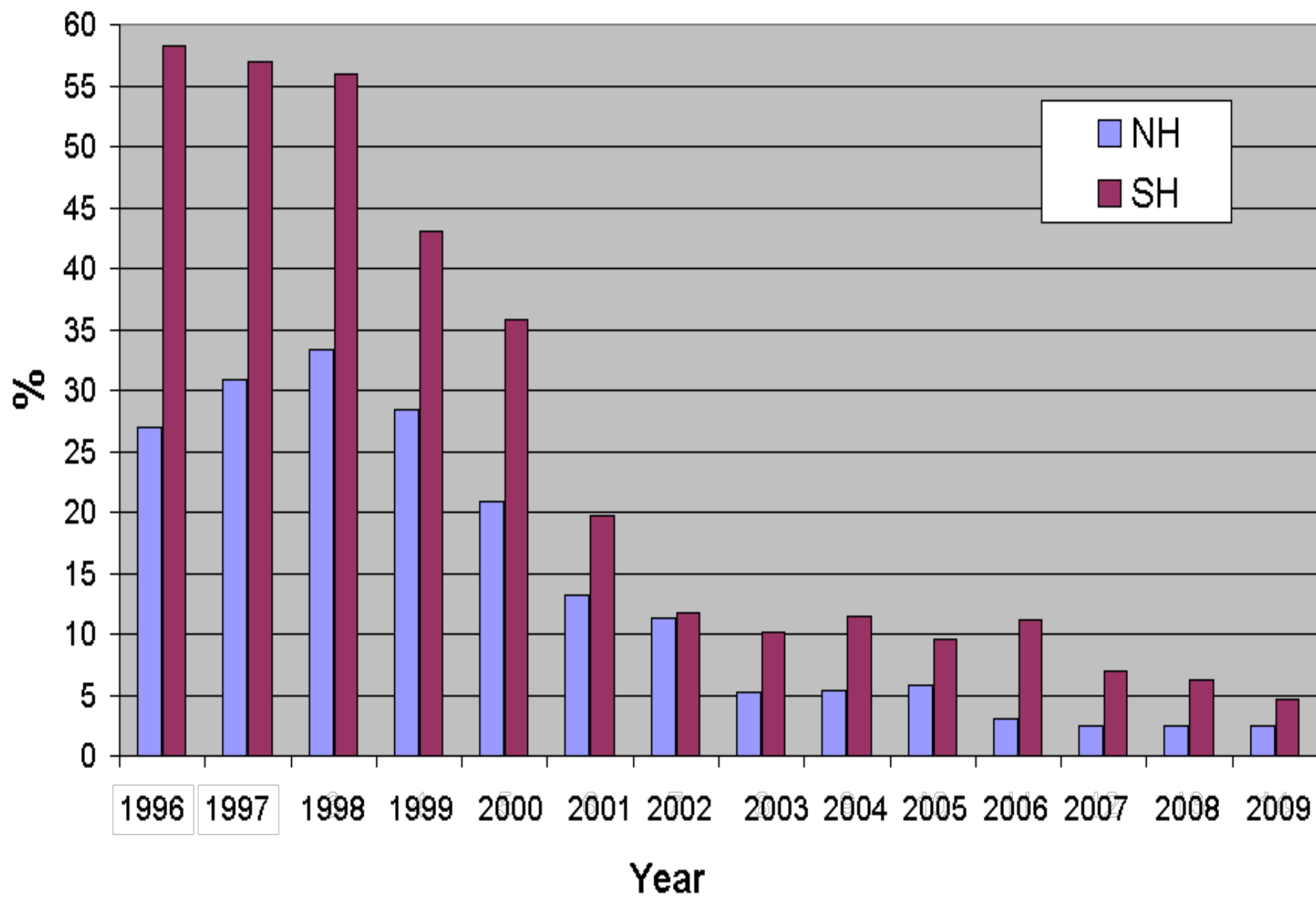
GFS 00Z-Cycle Day-5 Fcst, 500hPa Height, NH



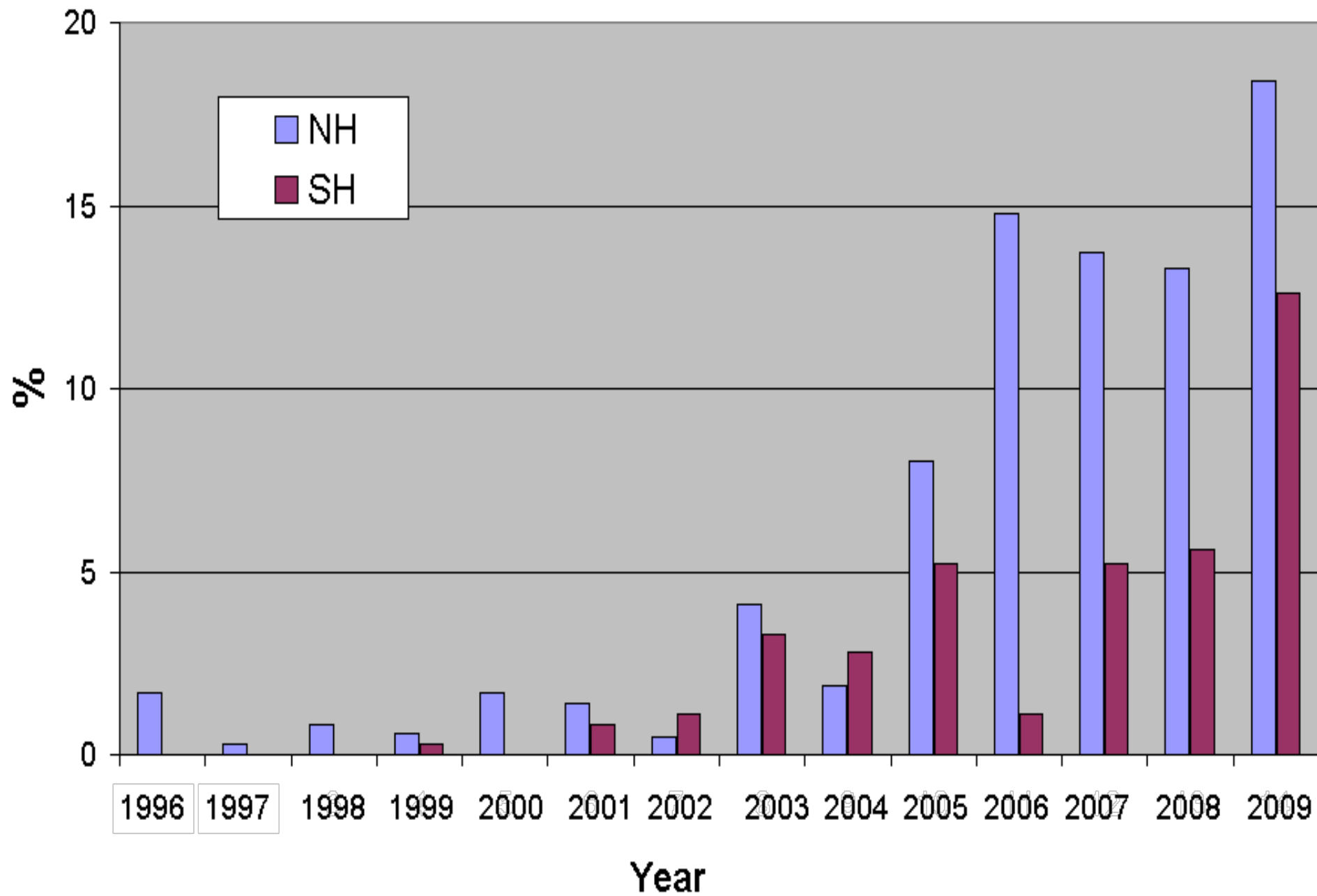
GFS 00Z-Cycle Day-5 Fcst, 500hPa Height, SH



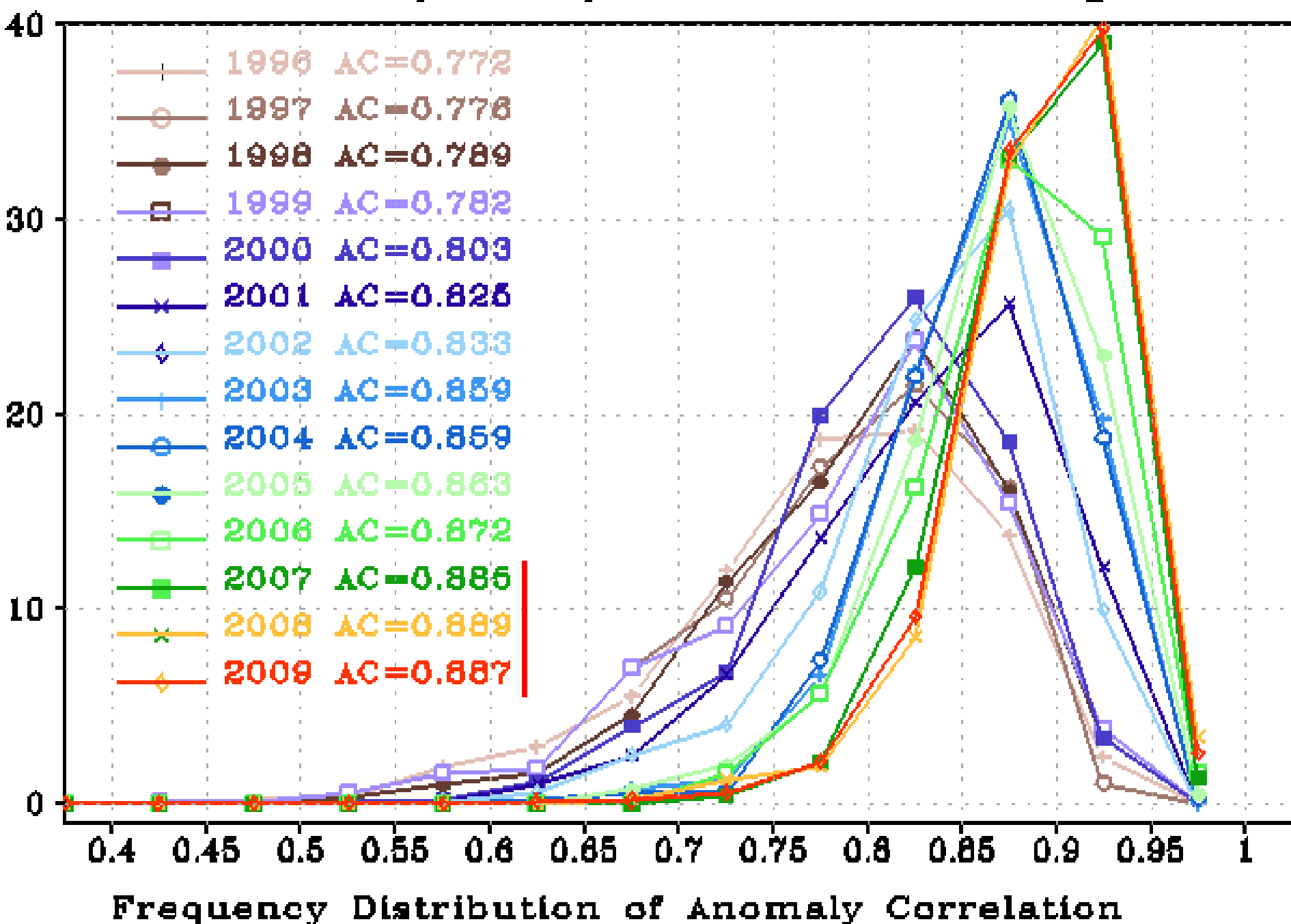
**Percent Count of Anomaly Correlations Below 0.7
GFS 00Z-Cycle Day-5 Forecast, 500hPa Height**



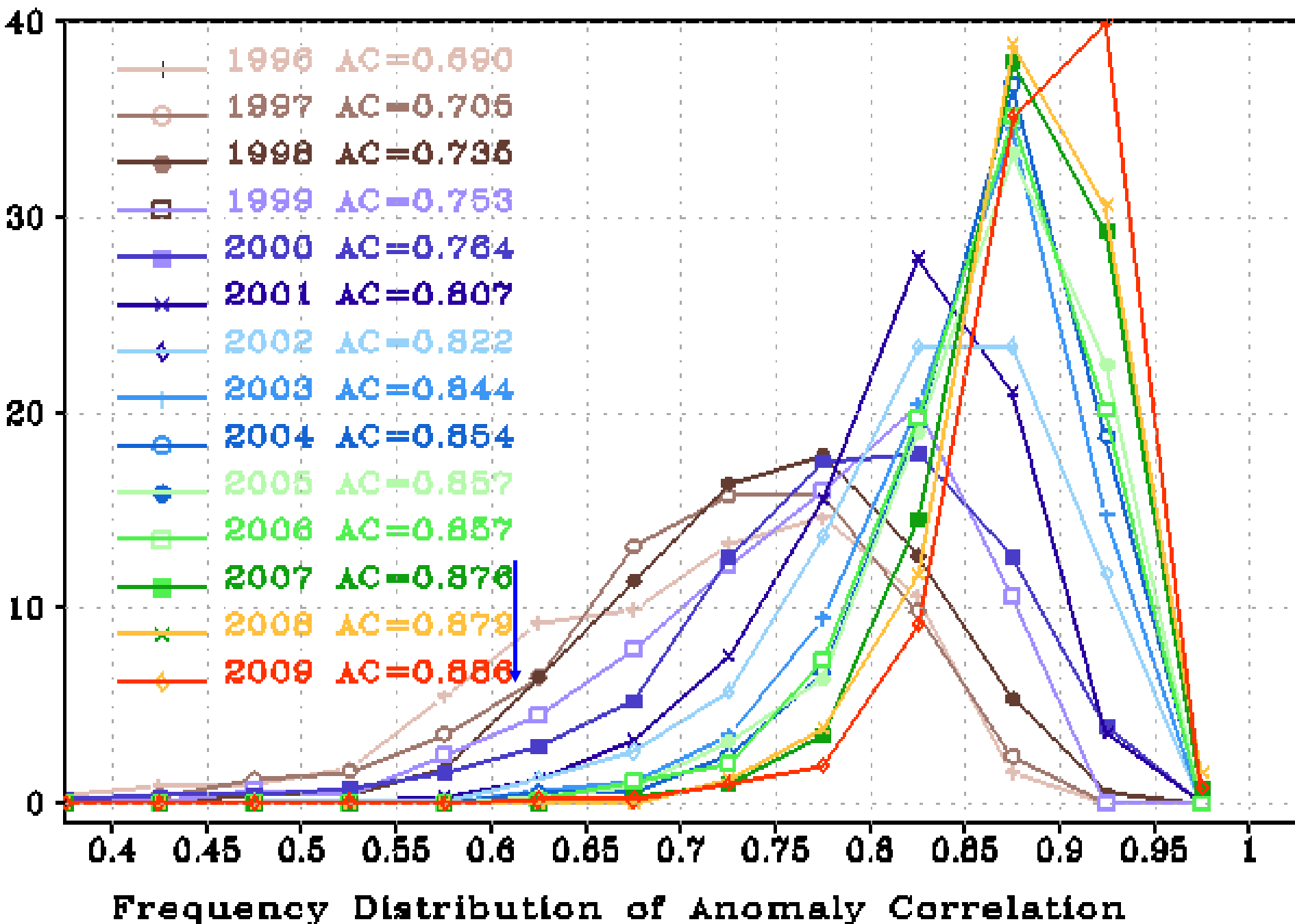
Percent Count of Anomaly Correlations Above 0.9
GFS 00Z-Cycle Day-5 Forecast, 500hPa Height



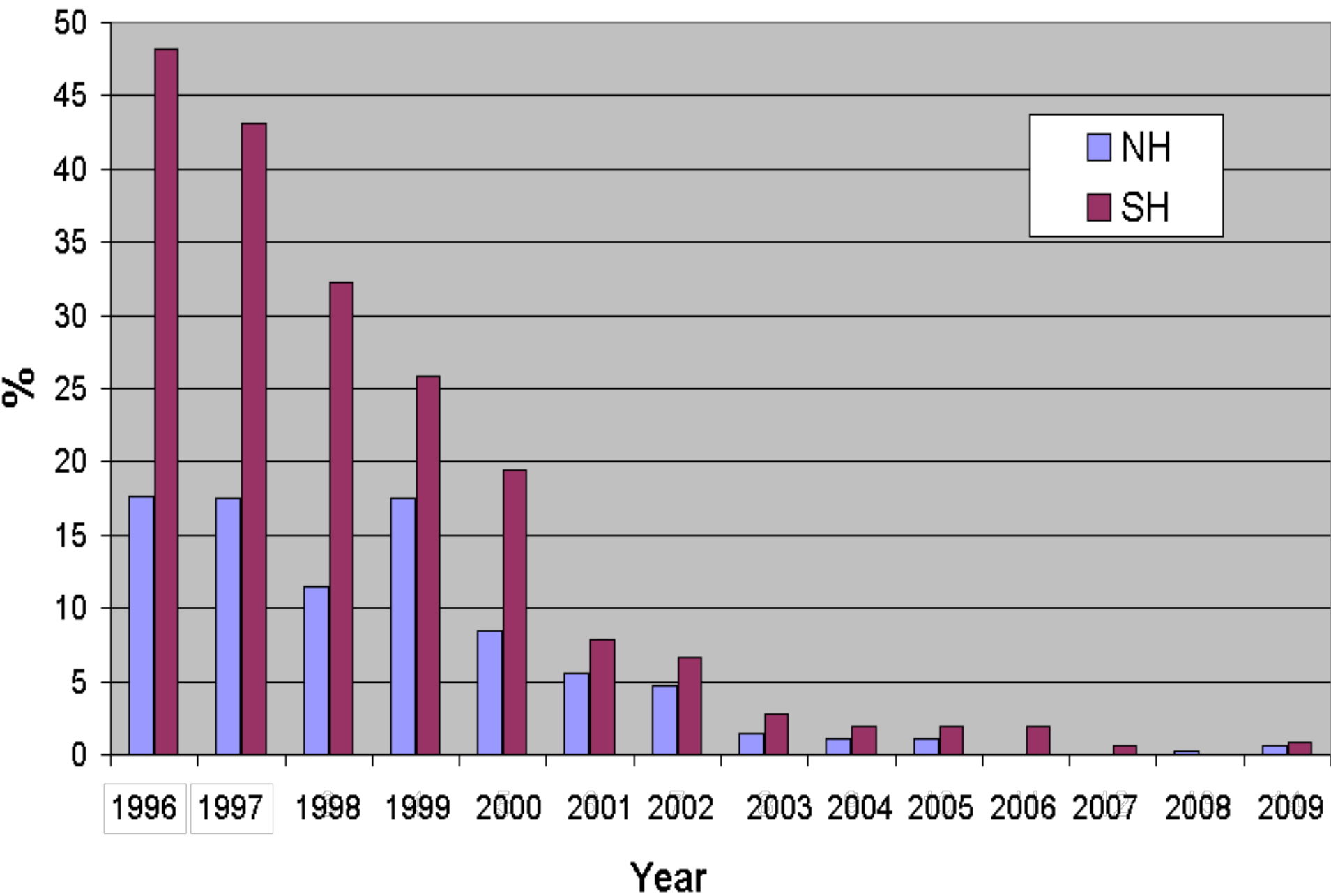
ECMWF 00Z-Cycle Day-5 Fcst, 500hPa Height, NH



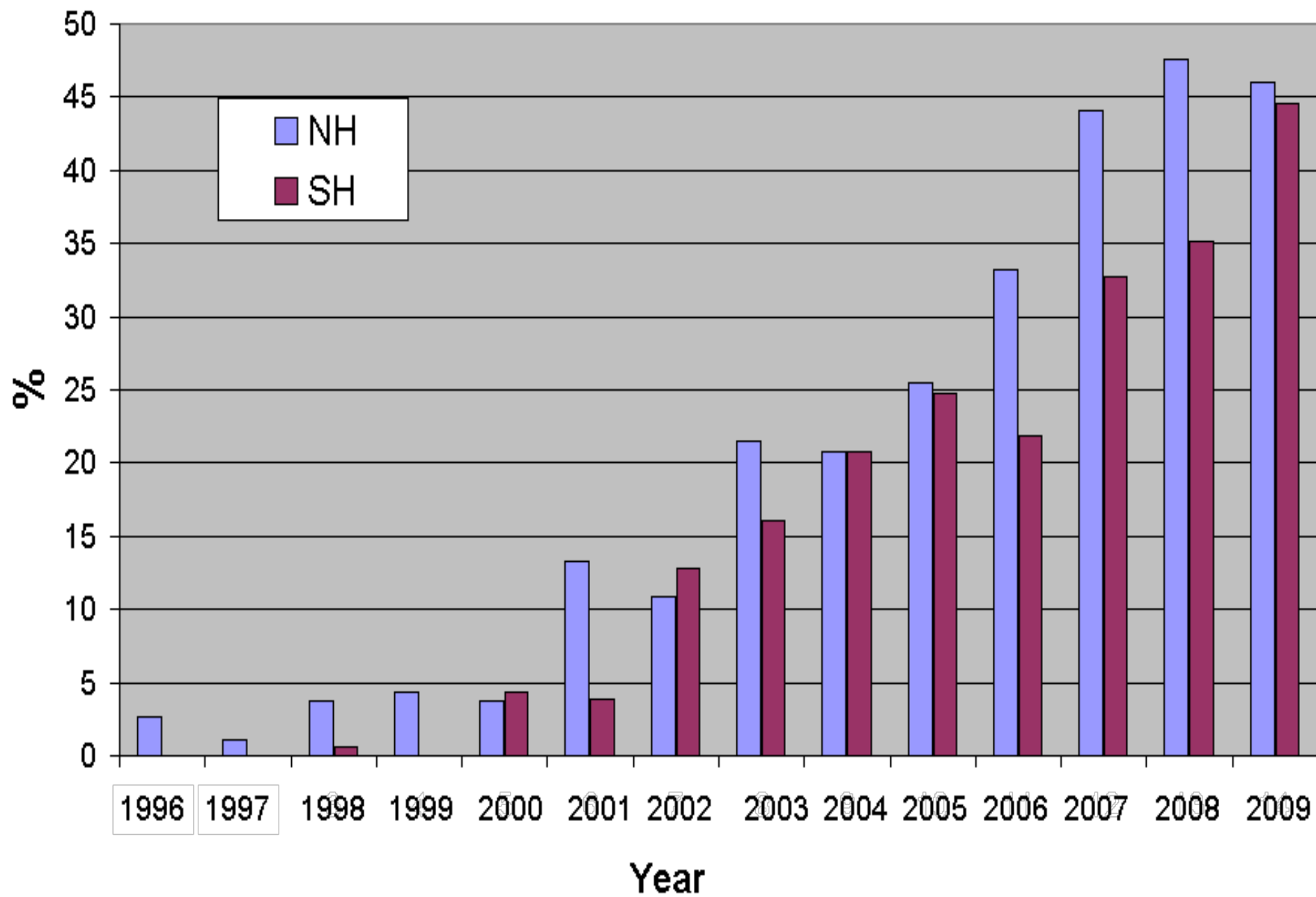
ECMWF 00Z-Cycle Day-5 Fcst, 500hPa Height, SH



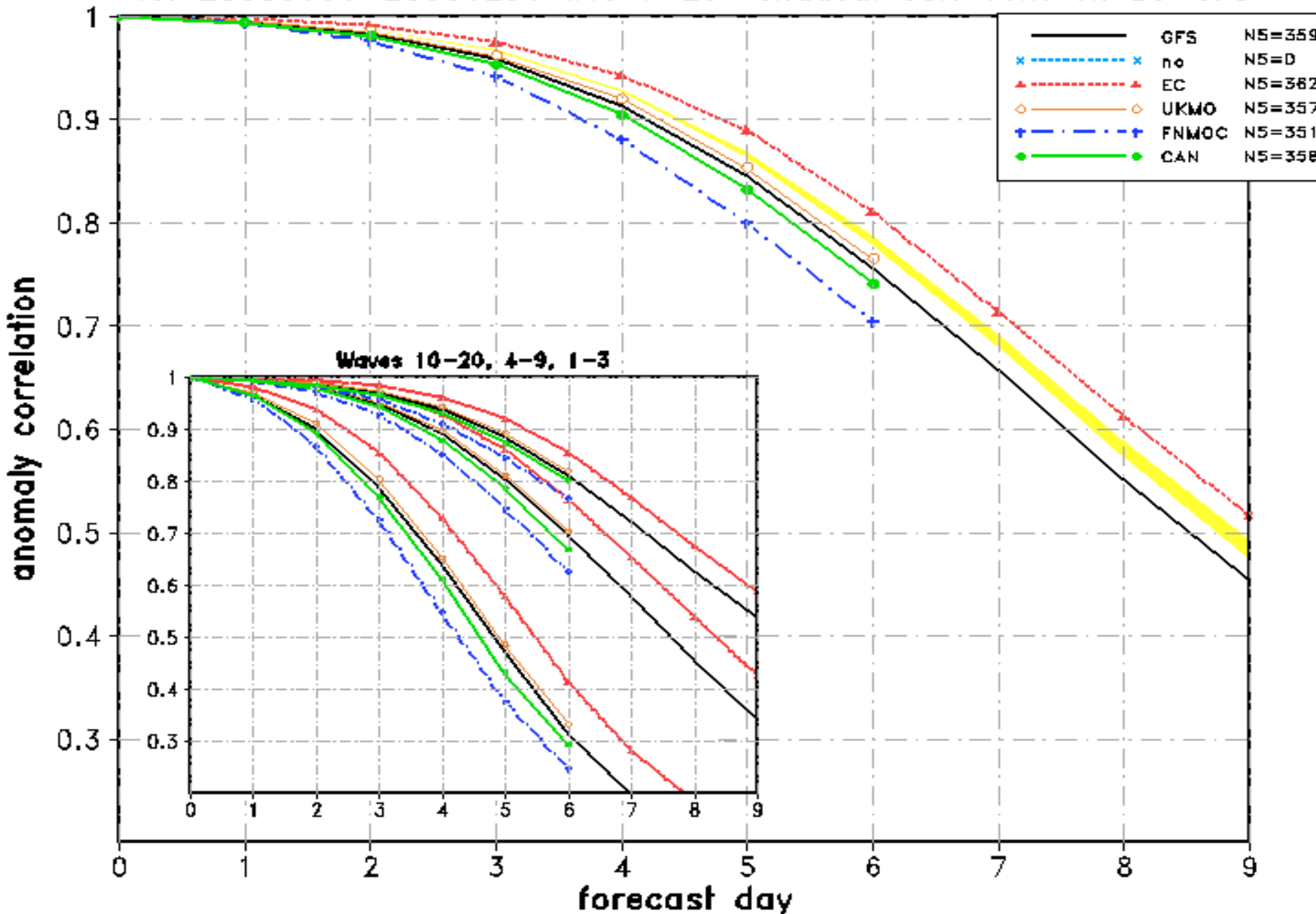
**Percent Count of Anomaly Correlations Below 0.7
ECMWF 00Z-Cycle Day-5 Forecast, 500hPa Height**



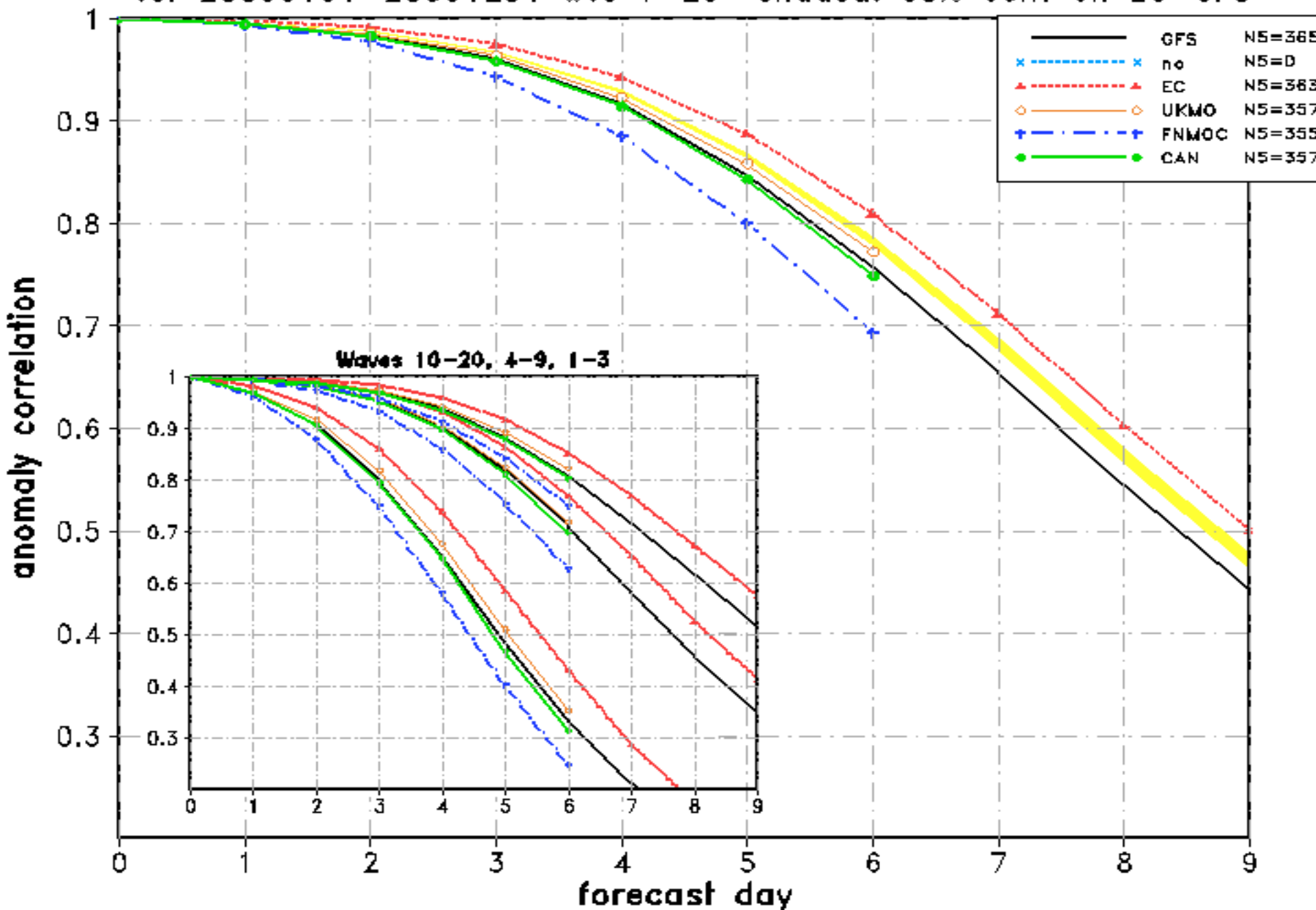
**Percent Count of Anomaly Correlations Above 0.9
ECMWF 00Z-Cycle Day-5 Forecast, 500hPa Height**



Anomaly Correlation die-off Z500mb N Hem
 ver 20080101-20081231 wvs 1-20 shaded: 95% conf on EC-GFS



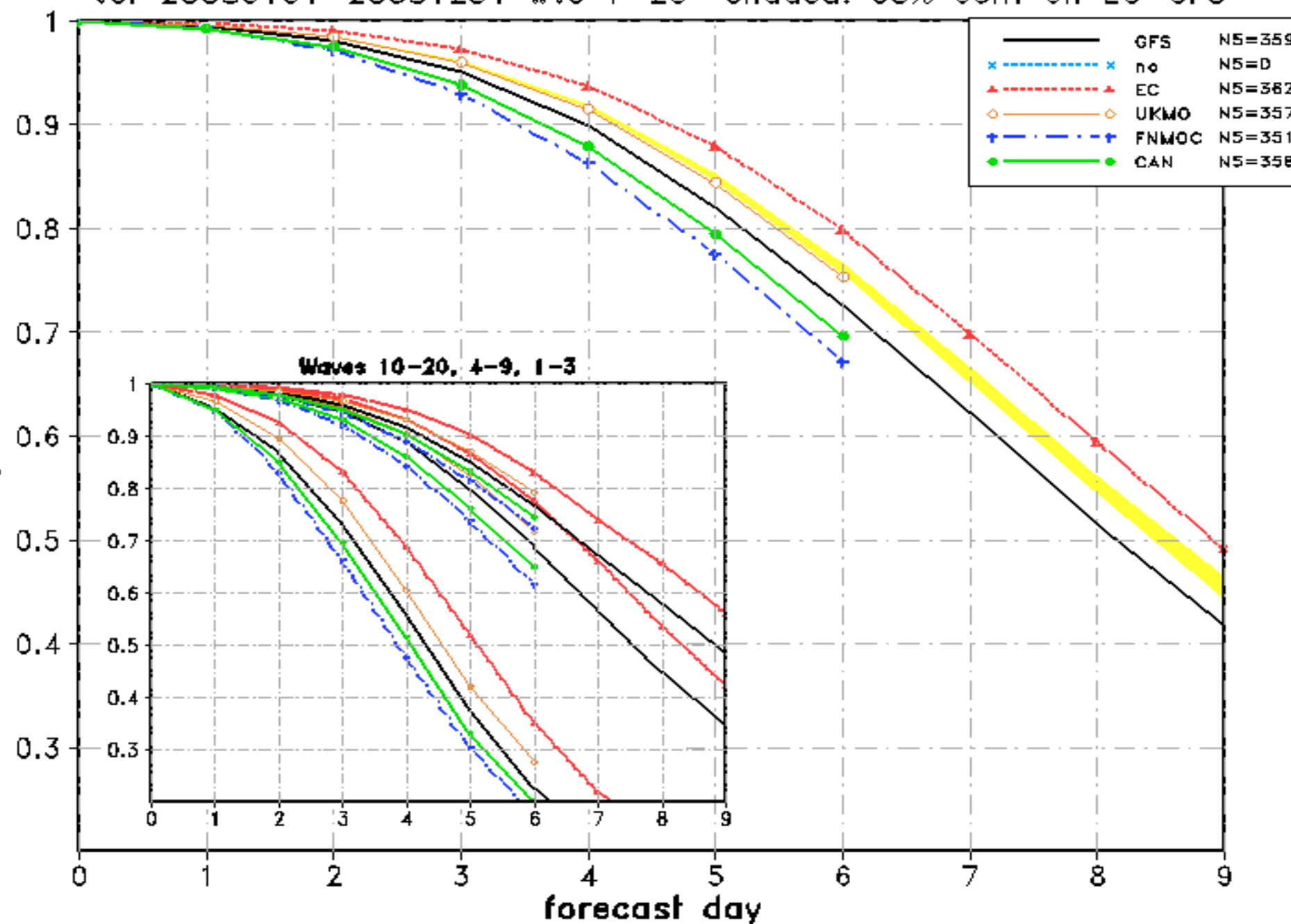
Anomaly Correlation die-off Z500mb N Hem
 ver 20090101-20091231 wvs 1-20 shaded: 95% conf on EC-GFS



Anomaly Correlation die-off Z500mb S Hem

ver 20080101-20081231 wvs 1-20 shaded: 95% conf on EC-GFS

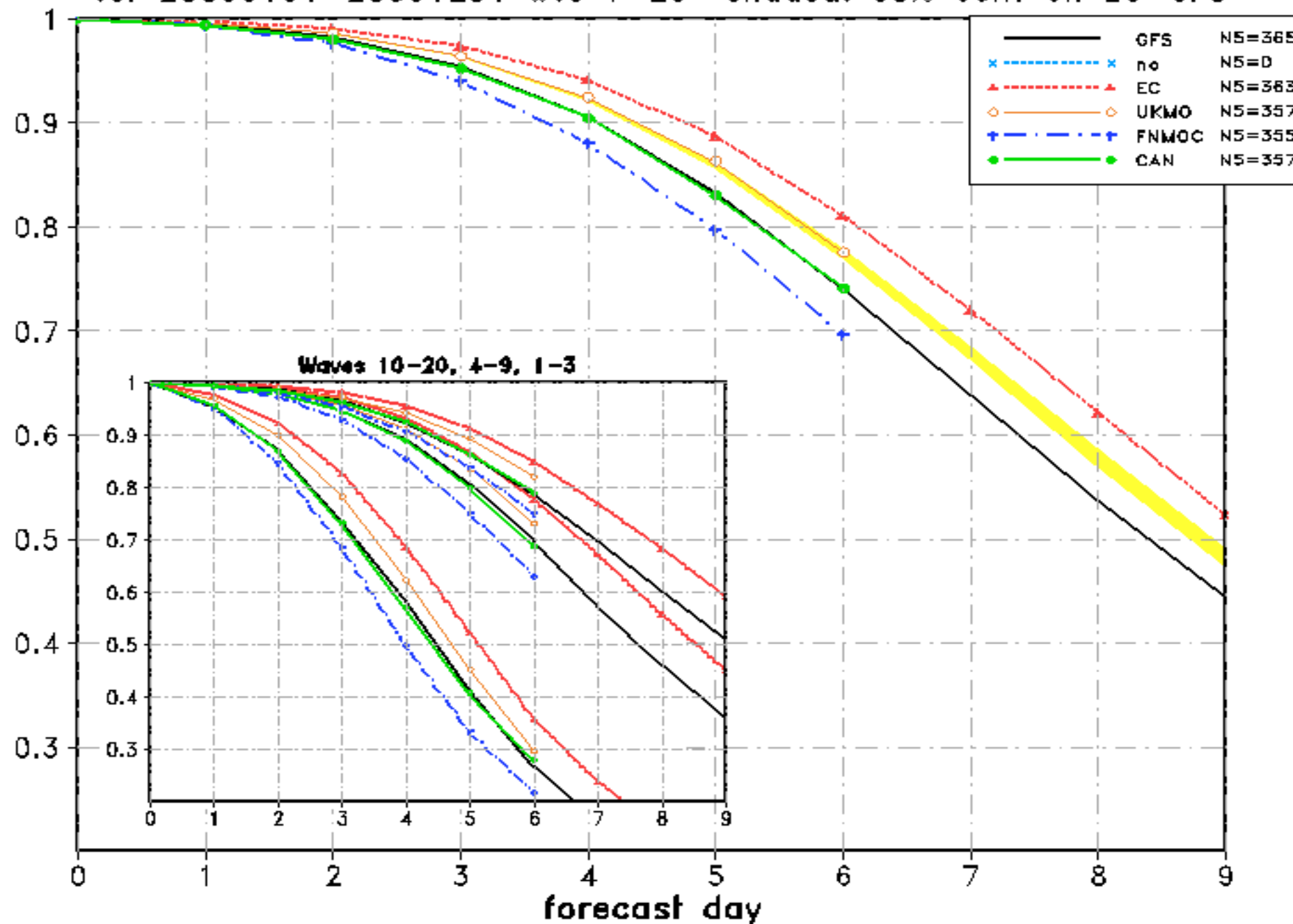
anomaly correlation



Anomaly Correlation die-off Z500mb S Hem

ver 20090101-20091231 wvs 1-20 shaded: 95% conf on EC-GFS

anomaly correlation



In 2009

GFS gained on ECMWF both hemispheres

CMC, MO gained on GFS both hemispheres

GFS gained on FNMOC Northern Hemisphere

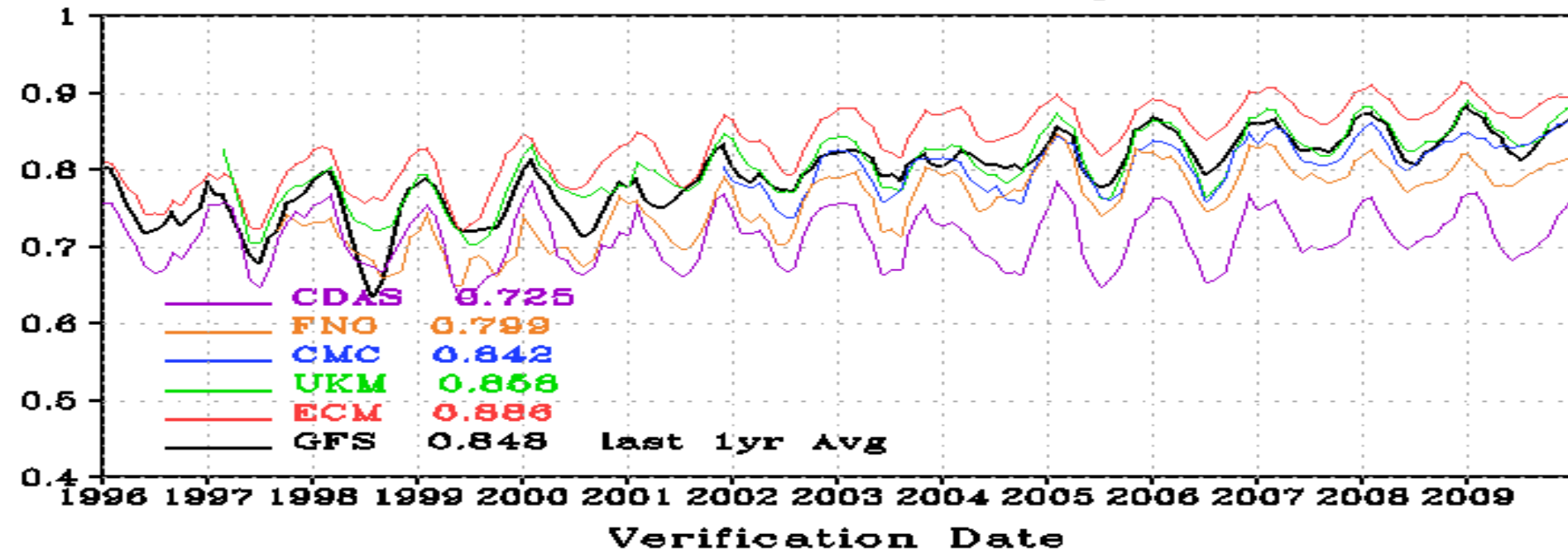
FNMOC gained on GFS Southern Hemisphere

ECMWF significantly ahead of GFS both hemispheres

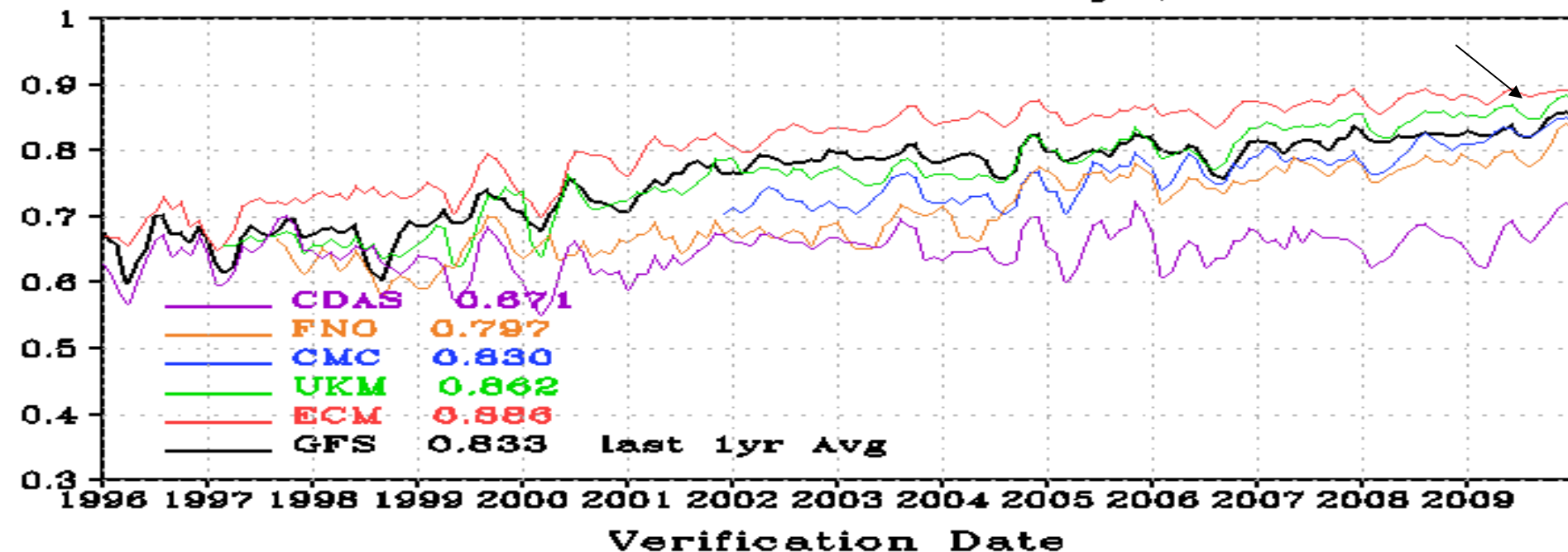
MO significantly ahead of GFS Southern Hemisphere

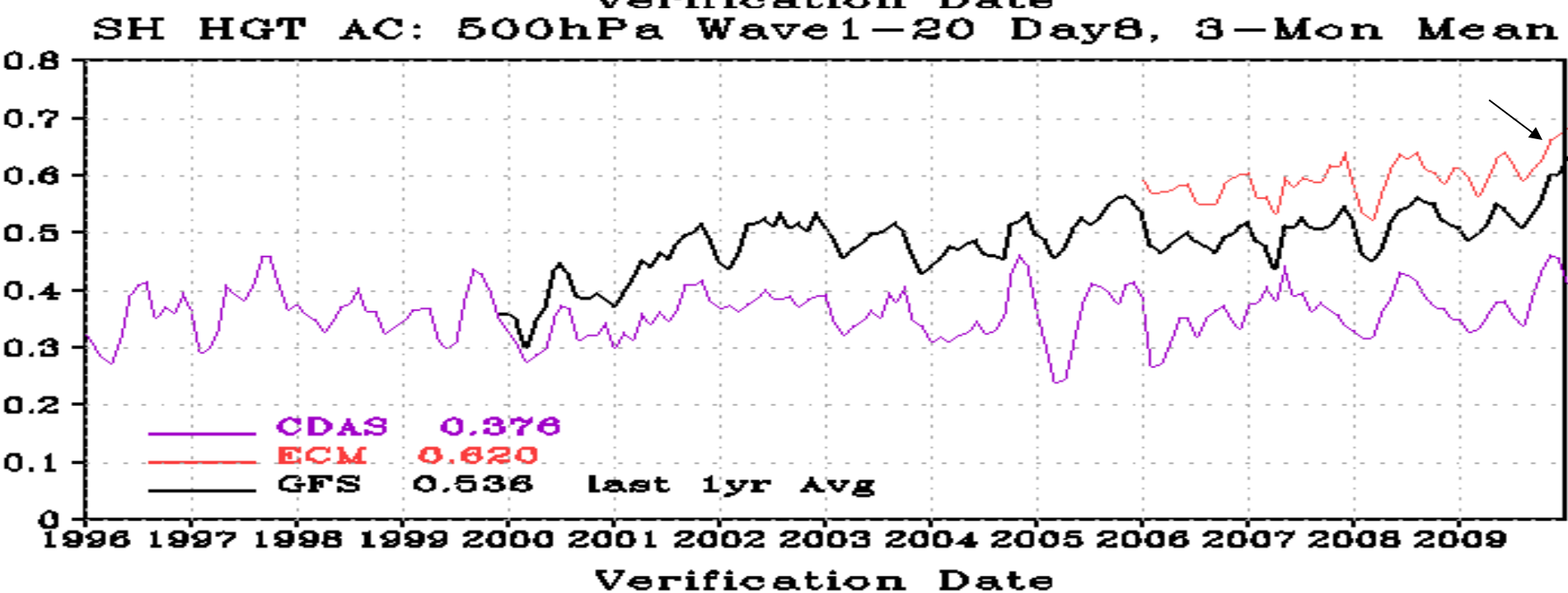
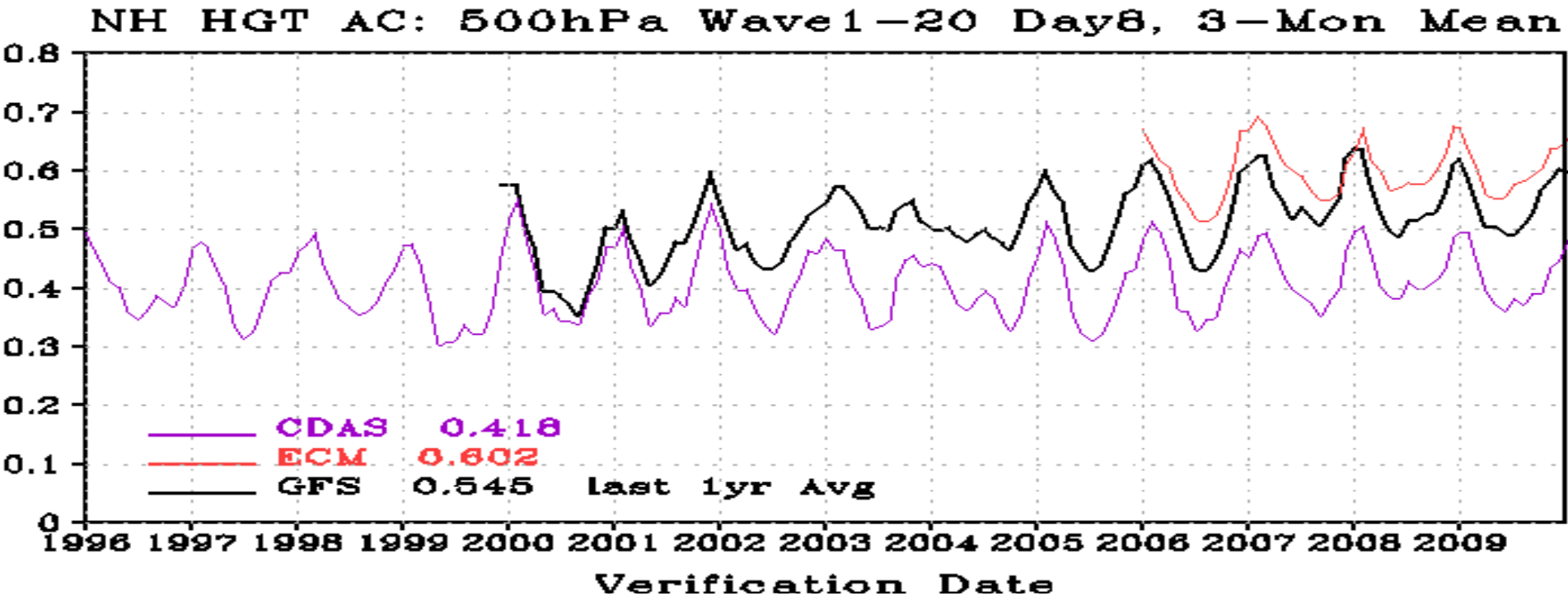
GFS significantly ahead of FNMOC both hemispheres

NH HGT AC: 500hPa Wave1-20 Day5, 3-Mon Mean

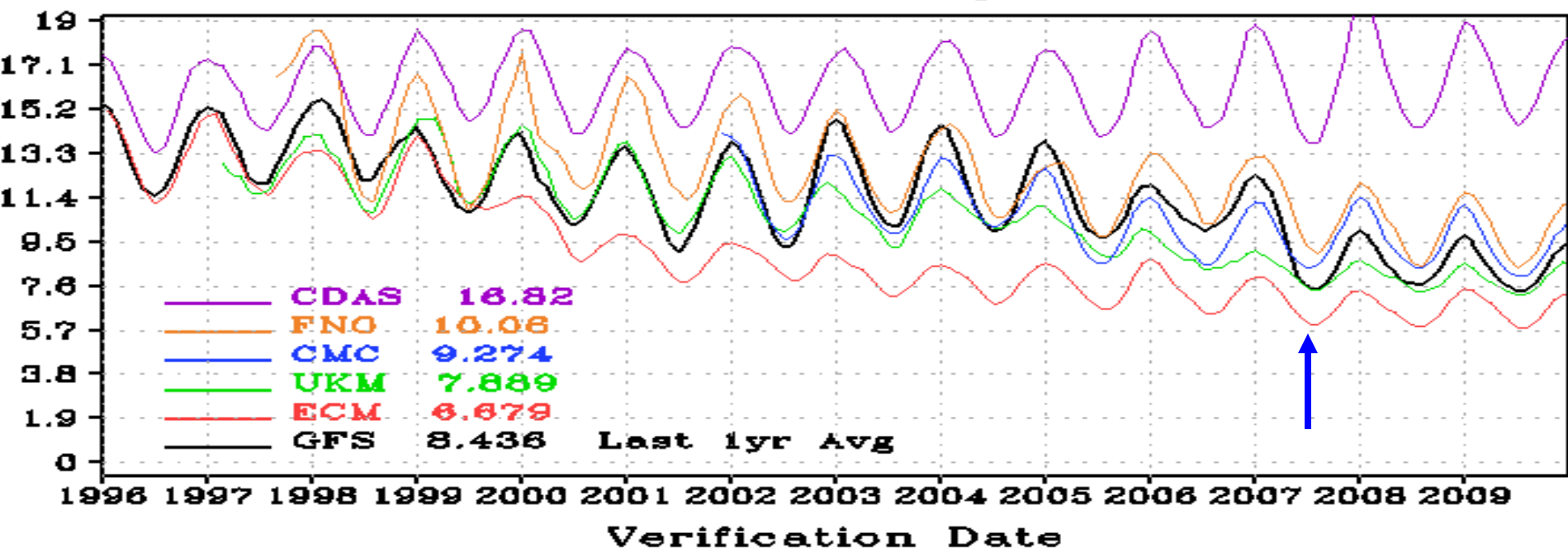


SH HGT AC: 500hPa Wave1-20 Day5, 3-Mon Mean

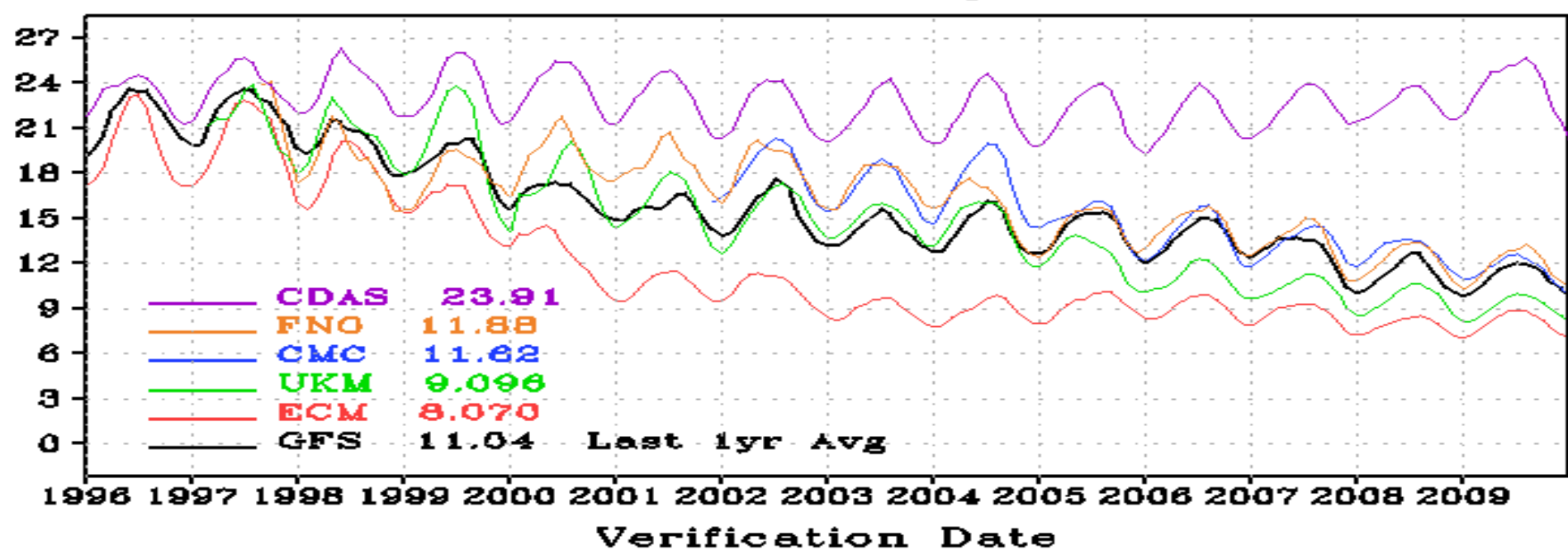




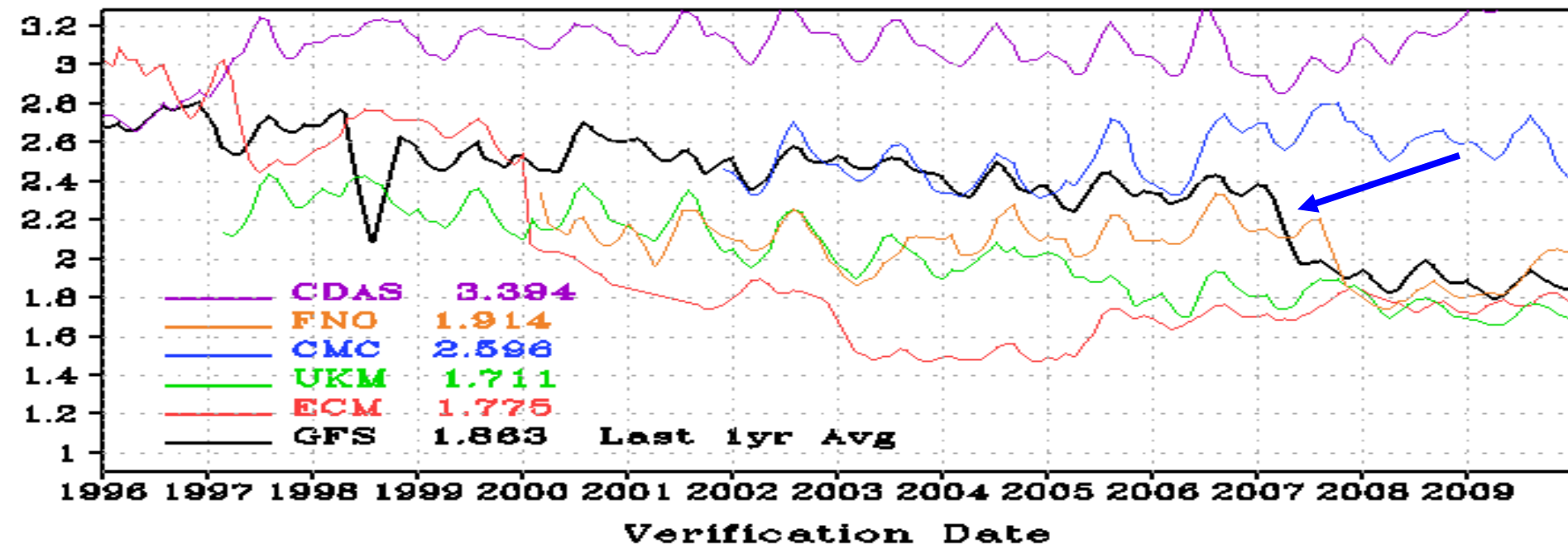
NH HGT RMSE: 500hPa Day1, 3-Mon Mean



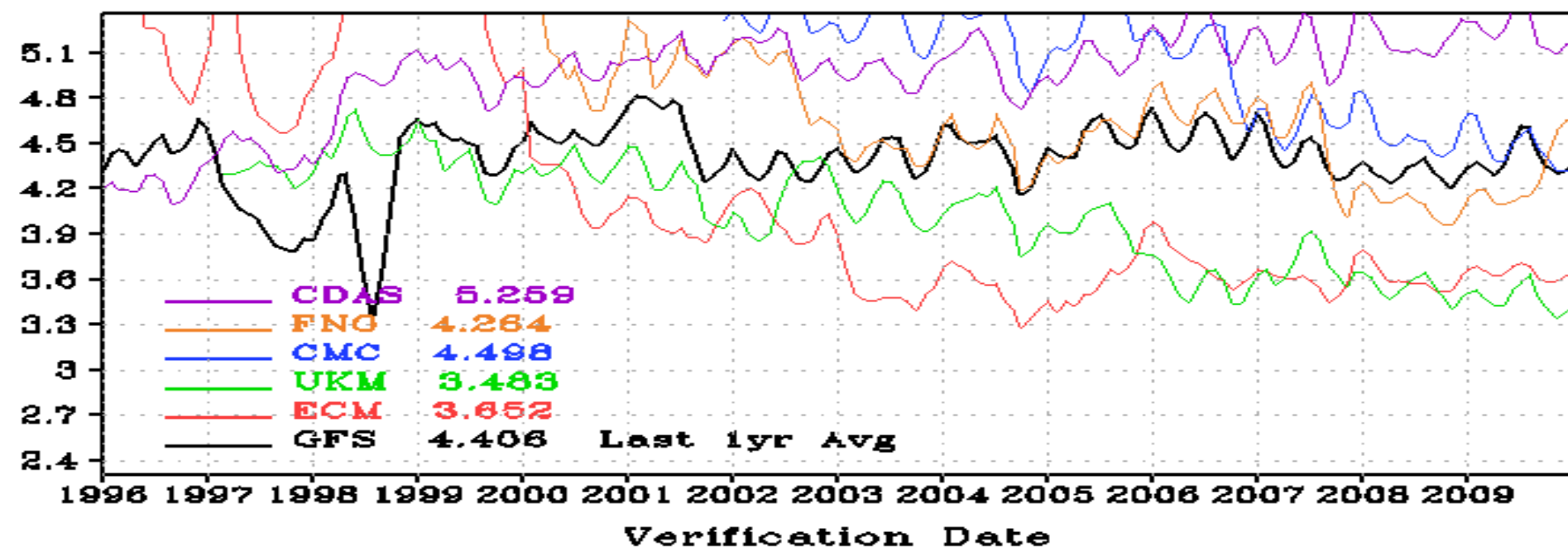
SH HGT RMSE: 500hPa Day1, 3-Mon Mean



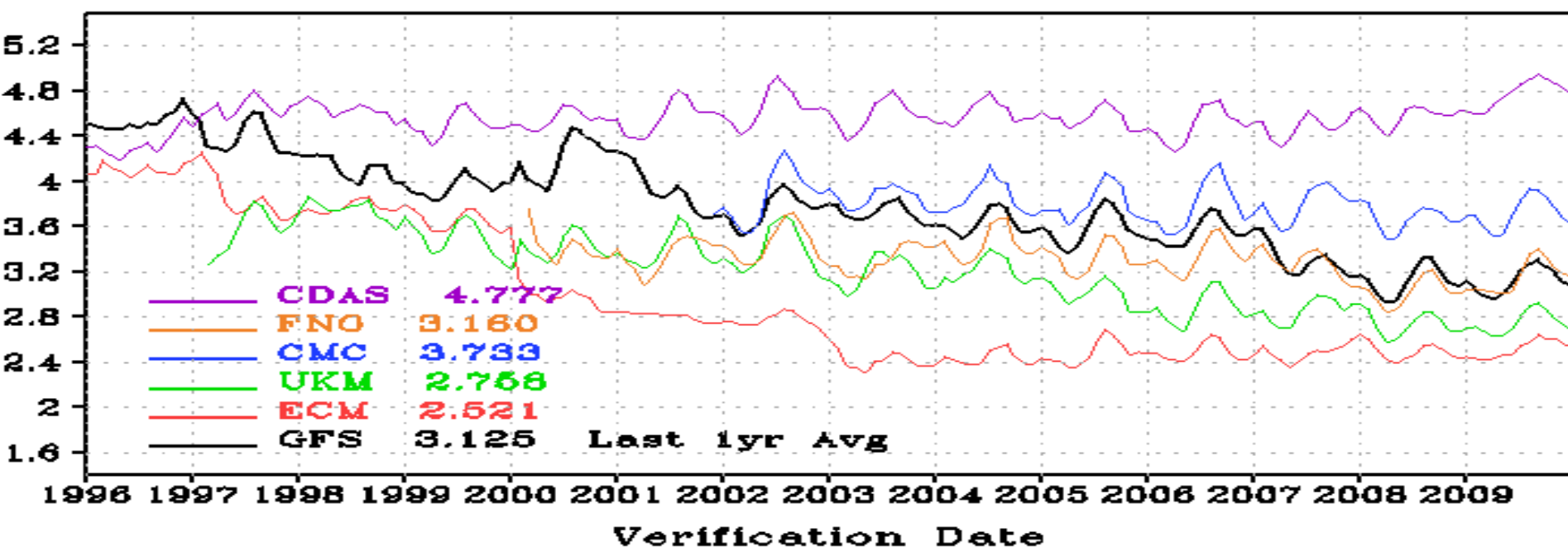
Tropic Vector Wind RMSE: 850hPa Day1. 3-Mon Mean



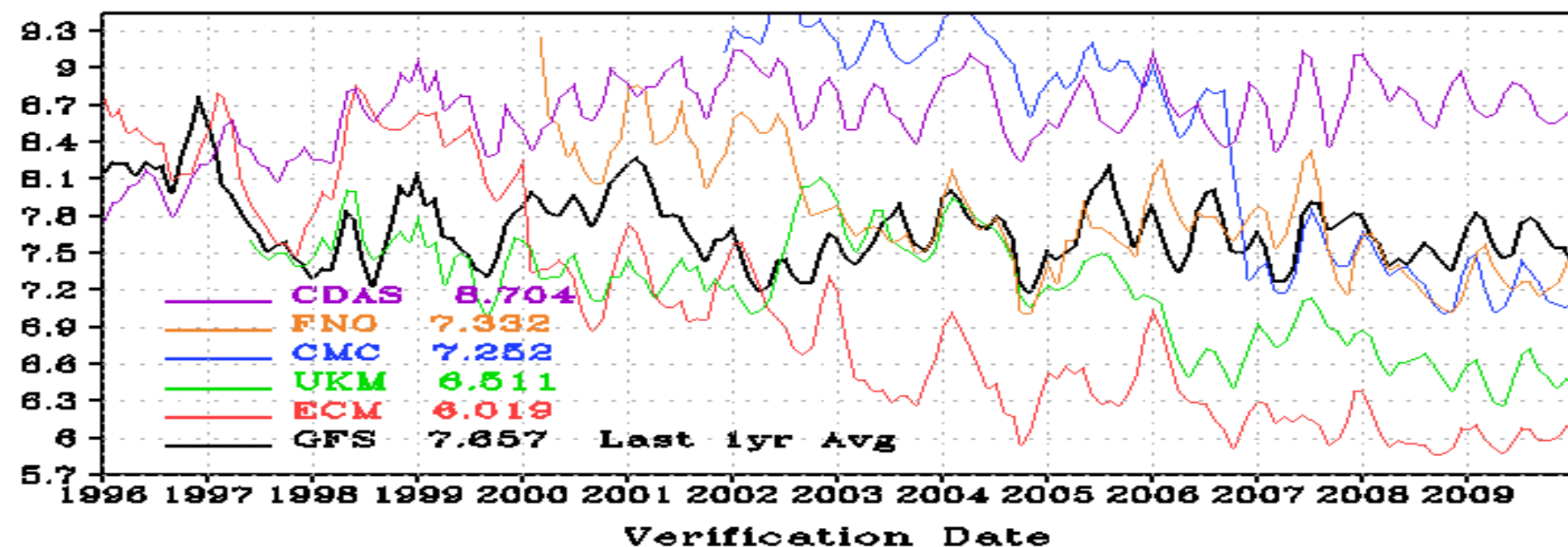
Tropic Vector Wind RMSE: 200hPa Day1. 3-Mon Mean



Tropic Vector Wind RMSE: 850hPa Day3. 3-Mon Mean



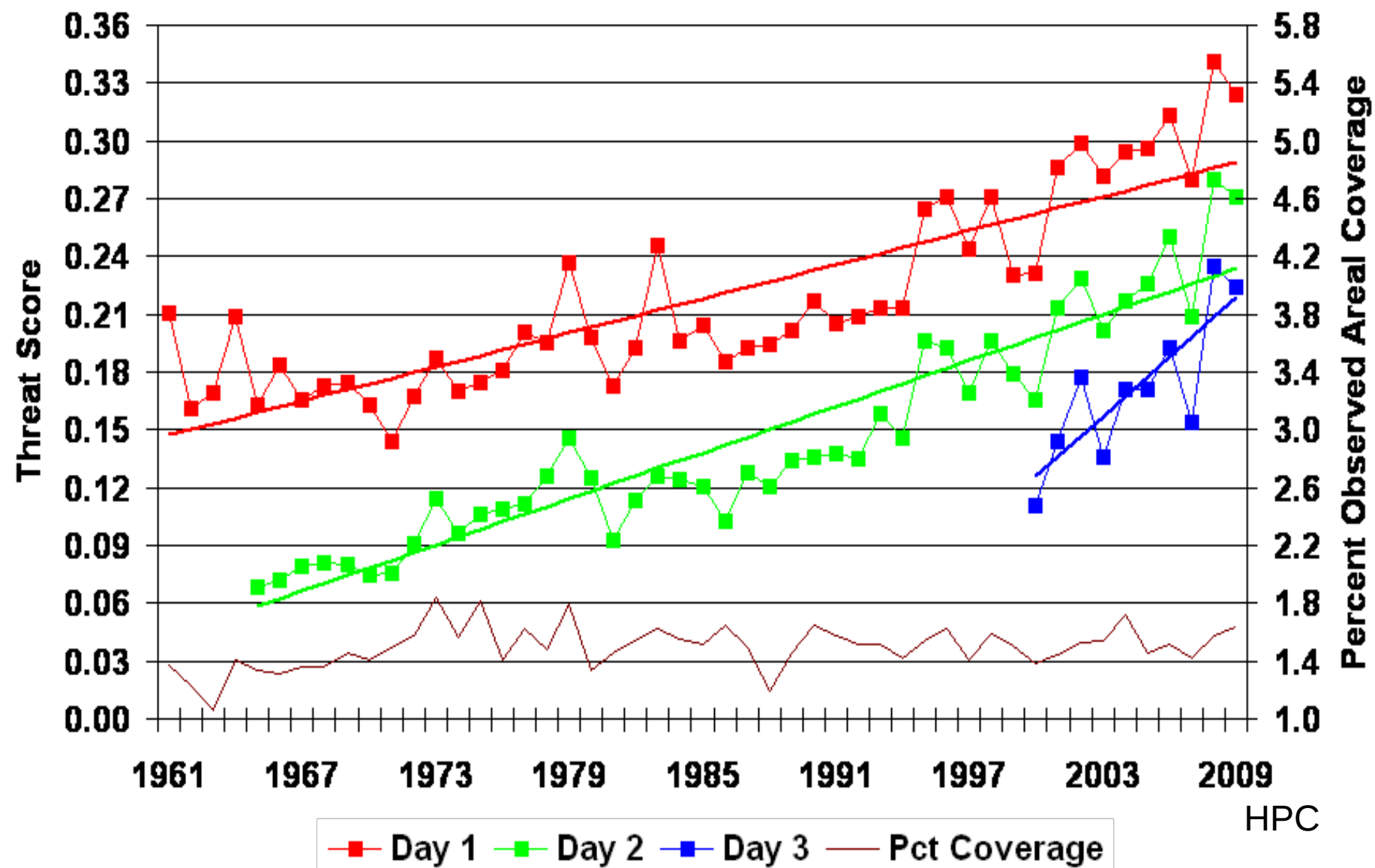
Tropic Vector Wind RMSE: 200hPa Day3. 3-Mon Mean



######

Annual HPC Threat Scores: 1.00 Inch

Day 1 / Day 2 / Day 3



Days 4-5 QPF Threat Scores: 0.50"

Nov 2008 - Nov 2009

